BIBLIOGRAPHICAL NOTICE.

Foraminifera from the Deep-sea Soundings obtained in 1874–1876 *by H.M.S. 'Gazelle.'* Described by Dr. Joseph George Egger, &c. 4to. 266 pages, with a Chart and 21 full pages of figures in the text. Munich, 1893. [*Foraminiferen aus Meeresgrundproben, u. s. w.* Abhandl. k. bayer. Akad. Wiss. II. Classe, xviii. Band, II. Abth. pp. 195–458.]

In this Memoir about 160 "Stations" whence the specimens were procured are enumerated, with particulars of their localities, nature of mineral materials, and relative proportion of minute organisms, especially the Foraminifera, pp. 6–23 (198–215). The line of occurrence of these places, the dates when obtained by the 'Gazelle,' and their depths are traceable on the block-map at page 5 (197),—from off Spain, down the Atlantic, round the Cape of Good Hope, across the Indian Ocean to South-west Australia, and then northwards to and through the Eastern Archipelago, down to New Zealand, thence away across the Pacific towards Cape Horn, then off to the South-east coast of South America, and lastly in the Mid-Atlantic, 3° 26′·7 S. lat., 25° 59′·2 W. long. (Paris), not far, W. by S., from Station "25."

Of the Foraminifera treated of at pages 6–248 (198–440) there are 493 species, of which only 44 are new, besides some new varieties. A Table of these Foraminifera, showing their localities and depths, is given at pages 249–261 (441–453); and their 1271 figures, printed by the Meisenbach-Riffarth photo-chemical zinc process, occupy 21 full pages in the text.

Although very closely crowded in these plates, rough in appearance and not so artistically neat and finished as in many modern illustrations of Foraminifera, yet the figures give very truthfully the characteristic features of these Microzoa; and, indeed, the closely packed condition gives the observer the advantage of a *coup d'œil*—recognizing at a glance the natural features of specific or generic groups—such as of *Biloculina* and *Spiroloculina* in plate 1, 54 figs., p. 26 (218); *Miliolina*, pl. 2, 86 figs., p. 35 (227); *Textularia* &c., pls. 6 and 7, 52 and 56 figs., pp. 76 and 85 (268 and 277); *Bulimina*, *Bolivina*, and *Virgulina*, pl. 8, 112 figs., p. 90 (282); *Polymorphina*, *Uvigerina*, and *Siphonogenerina*, 65 figs., p. 114 (306); *Lagena* &c., pl. 10, 101 figs., p. 128 (320); *Nodosaria* &c., pl. 11, 62 figs., p. 146 (338); *Cristellaria* &c., pl. 12, 42 figs., p. 157 (349); *Globigerina* &c., pl. 13, 83 figs., p. 164 (356); *Anomalina* &c., pl. 14, 42 figs., p. 185 (377); *Discorbina* and *Patellina*, pl. 15, 79 figs., p. 192 (384); *Truncatulina*, pl. 16, 64 figs., p. 206 (398); *Pulvinulina*, pl. 17, 45 figs., p. 214 (406). The specimens have been figured on an approximately proportional scale, and their actual dimensions are given with the descriptions in the text. An important drawback to the value of the illustrations is their small and cramped numbers of reference, always inconspicuous and sometimes difficult to decipher.

In the descriptions, as in the illustrations, economy of space has been very closely studied. All details of nomenclature that could at all be spared have been omitted, and only clues, as it were, are given to synonymy and the origin of names. H. B. Brady's 'Challenger' Report, 1884, is referred to throughout, with all the species except those that are new and some few others; the nomenclature being given very curtly and left to be worked out from the 'Challenger' Report, for by far the most part, and from the works of d'Orbigny, Reuss, Gümbel, Schwager, Silvestri, Moebius, Schlumberger, and a few other authors of species or genera occurring here and there in the Memoir, with bare reference only to monograph or memoir. Rhizopodists, however, have to be thankful to the Bavarian Academy for having printed and published this important monograph, though limiting the Author to so imperfect a method of nomenclature.

Dr. Egger especially acknowledges the kind help and counsel he has received from Dr. C. W. von Gümbel, of Munich, in the furtherance of his work *.

The distribution of Foraminifera, as indicated by the results of Dr. H. B. Brady's study of those brought home by the 'Challenger,' is throughout referred to in addition to Dr. Egger's determination of those obtained by the 'Gazelle;' and the long Table of the distribution of the species at pp. 249–261 (441–453), and particularly the notes on the eight zones of depth, at pp. 262–265 (454–457), supply important additions to our knowledge of the hydrographical and bathymetrical range of the Foraminifera. The long Table referred to gives the relative abundance or scarcity of the several species at a glance, owing to the relative abundance or sparseness of the figures in the columns carrying the numbers of the Stations. The eight zones, each taking 100 metres of depth, reaching to 6000 metres, with the several stations where they were met with successively enumerated, give the proportionate occurrence of individual Diatoms, Radiolarians, Ostracods, and Foraminifera for the Stations, and the numerical value of the species of the last for the zones of depth. Thus in the fifth zone (from 2000 to 2999 metres) there were 16 species of *Globigerina*, 11 *Pulvinulina*, 9 *Truncatulina*, 6 *Lagena*, 5 *Bolivina*, 4 *Discorbina*, and some others. In the 6th zone (3000 to 3999 metres), with a very great abundance of individuals, the number of species was relatively small—18 *Globigerina*, 13 *Lagena*, 11 *Pulvinulina*, 9 *Truncatulina*, 5 *Miliolina*, 4 *Biloculina*, with *Discorbina*, *Virgulina*, *Bolivina*, &c. In the 7th zone (4000 to 4999 metres) there were only 11 species of *Globigerina*, 9 *Pulvinulina*, 3 *Rotalina* (*Rotalia*), with *Lagena* and *Virgulina*. In the deepest (8th) zone (from 5000 to 6000 metres) the species were represented by 16 of *Globigerina* and 9 of *Pulvinulina*.

* The mineral and geological conditions of the Ocean-bed, as shown by the Soundings obtained by the 'Gazelle,' are fully treated of by Dr. von Gümbel, &c., &c., in the Second Part (Physics and Chemistry, 1888) of the "Forschungsreise S.M.S. 'Gazelle.'" 5 vols., 4to, Berlin, 1888–90.

Dr. Egger's views of the specific relationship of the Foraminifera are liberal. Following Brady for the most part, he fully recognizes that "varieties" are here little more than individual modifications of the "species," and that these, not widely separate one from another, often coalesce, leaving non-essential features as sufficient characteristics for convenience of grouping and registration. With all their capability of adapting themselves to varying conditions, and their consequent extreme plasticity of form, they yet possess a well-recognized fixity of type. Dr. Egger's abundant figures of individuals grouped by certain alliances of form and structure offer strong confirmation of this, and will be of great use both to the Student who wishes to become acquainted with this Protozoan series and to the more advanced Biologist who might wish to have at hand some comprehensive illustrations of typical Foraminifera.

This memoir is a very valuable addition to foregoing monographic descriptions of these interesting and cosmopolitan Protozoa. We are sure that the Author's having chosen to work on the lines of Brady's 'Challenger' Report will be of advantage in securing some uniformity in the treatment of the "genera" and "species" among the many would-be rhizopodists of to-day, who are bewildered with the almost endless varietal forms of the creatures themselves and with the complicated synonymy with which they have been overloaded.

MISCELLANEOUS.

On the Dates of Sowerby's 'Genera of Recent and Fossil Shells.'

To the Editors of the 'Annals and Magazine of Natural History.'

Gentlemen,—Considerable trouble has been caused by the difficulty of fixing the dates of the separately published parts of this book: and a recent request from Mr. W. H. Dall, of Washington, for exact information has led me to investigate the matter. The book was published at intervals between 1822 and 1834(?); forty-two parts were issued, the contents of which have been given by R. B. Newton, who was the first to print a collation of "The Genera" in his Syst. List Edwards Collection (Catal. Brit. Mus.), 1891, p. 321. These contents were taken from a set of original wrappers, of which only two are dated, preserved in the Natural History Museum.

In the course of my research I have been delighted to find, through the courtesy of Mr. Harting and Mr. Kappel, the original MS. Donation Books of the Linnean Society between 1822 (end) and 1840, in a perfect condition. These manuscript records are priceless for bibliographic purposes, as they show every appearance of careful recording. Many periodicals have also been ransacked, particularly Férussac's 'Bulletin des Sciences Naturelles,' section ii., 1824–31, the 'Zoological Journal,' 1824–34, &c., by Mr. Newton, Mr. J. Saunders, and myself; but the evident exactness of the Donation Book of the Linnean Society permits its quotation as sufficient authority for those portions of the work it refers to.